

Project:

Sent by: Engr. Md. Maksudul Karim, General Manager (Plant)

Shahriar Steel Mills Ltd., Konapara, Jatrabari, Dhaka

TEST OF DEFORMED M.S. BARS IBDS ISO 6935-2:2016]

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY (BUET) DEPARTMENT OF CIVIL ENGINEERING

Mobile: 01819557964; PABX: (8802) - 55167100, 55167228-57 Ext. 7226, Info: http://brtc.ce.buet.ac.bd/#/home, Report verification: http://verify.ce.buet.ac.bd



STRENGTH OF MATERIALS LABORATORY BRTC No.: 1102-97526/CE/23-24; Dt. 6/8/2023

Ref.: Letter, Dt. 6/8/2023

Date of Test: 7/8/2023

Contractor/supplier: -

Samples were received in UNSEALED condition.

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2	3DS ISO 6935-2:2016 Weight Requirements, Nominal Area etc. (Table 2).
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ngth	inal mass per	al cross sect	Nominal bar dia., mm
Permissible deviation, %	Nominal, kg/m	inal cross sectional area, sq.mm	3
±8	0.222	28.3	6
±8 ±8	0.395	28.3 50.3 78.5	00
9∓	0.616	78.5	10
9∓	0.887	113 154 201 314 380 491 616 804 1257	12
±5	121	154	14
±5	1.58	201	16 20 22* 25 28 32 40
±5	2.46	314	20
±5	2.98	380	22*
##	2.46 2.98 3.85 4.84	491	25
#4	4.84	616	28
Ħ	6.31	804	32
±5 ±5 ±4 ±4 ±4 ±4 ±4	9.87	1257	40
±	15.42	1964	50

^{*22}mm dia. bar is not covered in BDS ISO 6935-2:2016. Its properties are derived following the principle used for other bar sizes Actual diameter of bars are shown for informative purpose only. It is not a requirement of BDS ISO 6935-2:2016. Actual diameter is the diameter of a perfectly round plain bar having same mass per unit length

BDS ISO 6935-2 Tensile Requirements for Common Steel Grades

Steel	Yield S	Yield Strength, ReH, MPa	Du	Ductiliy Properties	rties
Grade	Min.	Max.	Rm/ReH	Elongation, % (min.)	n, % (min
			min.	Total	At R m
B400C-R	400		1.15	14	7
B400CWR	400		1.15	14	7
B500C-R	005		1.15	7.6	7
B500CWR	500	-	1.15	7.1	7
B600C-R	009		1.15	10	
B450CWR	450	1.25 R _{ен} (min.)	1.15		7.5
B400DWR	400	1.3 R _{eн} (min.)	1.25	26	8
B420DWR	420	1.3 R eн (min.)	1.25	16	8
B500DWR	500	1.3 R _{eH} (min.)	1.25	13	8

Prof. Dr. Hasib Mohammed Ahsan, Test-in-Charge



Conversion factor: 1.0 MPa = 1.0 N/mm² = 145 psi. Strengths are based on nominal area



07 August 2023

Dr. Md. Shafiul Bari Test performed by:

Professor, Dept. of Civil Engg., BUET

samples are sent in a secure and sealed cover/packet/container under the signature of a competent authority. In order to avoid fradulent fabrication of test results, this report has been printed on a security paper. Important Note: Samples as supplied to us have been tested. BRTC does not have any responsibility as to the representative character of the samples required to be tested. It is recommended that the It is also recommended that the test results be collected by a duly authorized person.

Dept. of Civil Engg., BUET, Dhaka-1000, Bangladesh

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Testing & Consultati

STRENGTH OF MATERIALS LABORATORY

Sent by: Engr. Md. Maksudul Karim, General Manager (Plant) TEST OF DEFORMED M.S. BARS IBDS ISO 6935-2:20161

Shahriar Steel Mills Ltd., Konapara, Jatrabari, Dhaka

Project:

BRTC No.: 1102-97526/CE/23-24; Dt. 6/8/2023

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BDS ISO 6935-2:2016 Weight Requirements, Nominal Area etc. (Table 2). Nominal bar diamm	_	1		_	-		-	6			I	1	SSRM B420 DWR	SSRM B420 DWR	SSRM B420 DWR				Identification	Frog Mark /
minal Area etc. (Table 2). 6 8 10 12 14 16 20 22* 25 28 32 40 50	•	-	•	•	•	•	•			•	•	,	12	12	12	mm			dia.	Nominal
16 20	-	1		1	-	1		-	-	-	-1	-	11.8	11.9	11.8	mm			dia.	Actual
22* 25	-	1	ı	1		(S).T.	-	1		-	-	-	0.859	0.873	0.854	kg/m	Length	Unit	Per .	Mass
28 32 40						***************************************								0.862		kg/m	Length	Unit	Mass Per	Average
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Convers							6)						451	447	436	MPa	R _{et}	Strength	Proof	Yield or
Conversion factor: 1.														445		MPa	Ren	Strength,	Yield	Average
0 MPa = 1.0		-		-	,								69	69	68.1				Load	Tensile
$N/mm^2 = 149$	7	1		•	•		•	•	-	-	-	1	610	610	509	MPa	R R		Strength	Tensile
5 psi. Streng		1				L								610		MPa	R _B	Strength,	Tensile	Average
ths are bas					,									1.37						R _m /R _{eH}
$1.0 \text{ MPa} = 1.0 \text{ N/mm}^2 = 145 \text{ psi. Strengths are based on nominal area.}$	-		,	ı									28	28	28	= 5d)	(G.Jength	(%)	Elongation	Total
l area.											•			28			(%)	Elongation	Total	Average
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														1	•				Test	Rebend

Nominal bar dia., mm Nominal mass per Nominal, kg/m Nominal cross sectional area, sq.mm 22mm dia, bar is not covered in BDS ISO 6935-2:2016. Its properties are derived following the principle used for other bar sizes Permissible deviation, % 28.3 0.222 50.3 0.395 201 314 1.58 2.46 ±5 ±5 40 1257 9.87

Actual diameter is the diameter of a perfectly round plain bar having same mass per unit length Actual diameter of bars are shown for informative purpose only. It is not a requirement of BDS ISO 6935-2:2016

BDS ISO 6935-2 Tensile Requirements for Common Steel Grades

Steel	Yield S	Yield Strength, R ен, MPa	Du	Ductiliy Properties
Grade	Min.	Max.	Rm/ReH	Elongation,
			min	Total
B400C-R	400		1.15	
B400CWR	400		1.15	
B500C-R	500	-	1.15	
B500CWR	500		1.15	
B600C-R	600		1.15	
B450CWR	450	1.25 R _{ен} (min.)	1.15	
B400DWR	400	1.3 R _{eH} (min.)	1,25	
B420DWR	420	1.3 R eн (min.)	1.25	
B500DWR	500	1.3 R eH (min.)	1.25	

Prof. Dr. Hasib Mohammed Ahsan, Test-in-Charge Countersigned by:

Dept. of Civil Engg., BUET, Dhaka-1000, Bangladesh

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07 August 2023

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STRENGTH OF MATERIALS LABORATORY

BRTC No.: 1102-97526/CE/23-24; Dt. 6/8/2023

Date of Test: 7/8/2023 Ref.: Letter; Dt. 6/8/2023

Contractor/supplier: - -

Project:

Sent by: Engr. Md. Maksudul Karim, General Manager (Plant)

Shahriar Steel Mills Ltd., Konapara, Jatrabari, Dhaka

TEST OF DEFORMED M.S. BARS IBDS ISO 6935-2:2016

Samples were received in UNSEALED condition.

		area.	Conversion factor: 1.0 MPa = 1.0 N/mm² = 145 psi. Strengths are based on nominal area.	hs are base	5 psi. Strengtl	$N/mm^2 = 14$	0 MPa = 1.0	sion factor: 1.0	Convers	50	tc. (Table 2). 10 12 14 16 20 22* 25 28 32 40 50	22* 25	16 20	ible 2).	, Nominal Area etc. (Ta	BDS ISO 6935-2:2016 Weight Requirements, Nominal Area etc. (Table 2). Nominal bar diamm 6 8 10 12	BDS ISO 6935-2:2016 Nominal bar dia mm
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	Satisfactory		23			635	128		437	87.9		1.565	15.9	16	DWR	SSRM B420 DWR	•
			= 5d)		MPa	MPa	KN	MPa	MPa	kN	kg/m	kg/m	mm	mm			
	samples)	(%)	(G.length		Ra	Ra		ReH	ReH		Length	Length					_
	(Seperate	Elongation	(%)		Strength,			Strength,	Strength	Load	Unit	Unit					
Test	Test	Total	Elongation		Tensile	Strength	Load	Yield	Proof	Proof	Mass Per	Per	dia.	dia.	ວຸກ	Identification	No.
Rebend	Bend	Average	Total	R _m /R _{eH}	Average	Tensile	Tensile	Average	Yield or	Yield or	Average	Mass	Actual	Nominal		Frog Mark /	SI.
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ominal bar dia., mm	3	6	00	10	12	14	16	20	22*	25	28	32	40	50
ominal cross sectional area,	ional area, sq.mm	28.3	50.3		78.5 113	154	201	314	380	491	616	804	154 201 314 380 491 616 804 1257 1964	196
ominal mass per	Nominal, kg/m	0.222 0	0.395	0.616	0.887	1.21	1.58 2.46 2.98 3.85 4.84 6.31	2.46	2.98	3.85	4.84	6.31	1 9.87 15.42	15.4
nit length	unit length Permissible deviation, % ±8 ±8	±8	8∓	_±6	9∓	±5	5∓	±5	±5	±4	±4	1 ±4	7 T T T T T T T T T T T T T T T T T T T	11

*22mm dia. bar is not covered in BDS ISO 6935-2:2016. Its properties are derived following the principle used for other bar sizes

Actual diameter of bars are shown for informative purpose only. It is not a requirement of BDS ISO 6935-2:2016. Actual diameter is the diameter of a perfectly round plain bar having same mass per unit length.

Steel	Yield S	Yield Strength, ReH, MPa	Du	Ductiliy Properties	rties
Grade	Min.	Max.	Rm/ReH	Elongation,	n, % (min.)
			min.	Total	At R _m
B400C-R	400		1.15	14	7
B400CWR	400		1.15	14	7
B500C-R	005		1.15	14	7
B500CWR	500	<u> </u>	1.15	14	7
B600C-R	009		1.15	10	7
B450CWR	450	1.25 R eн (min.)	1.15		7.5
B400DWR	400	1.3 Ret (min.)	1.25	17	8
B420DWR	420	1.3 R eн (min.)	1.25	16	8
B500DWR	200	1.3 R - (min.)	1.25	£.	8

Countersigned by:

Dept. of Civil Engg., BUET, Dhaka-1000, Bangladesh Prof. Dr. Hasib Mohammed Ahsan, Test-in-Charge



07 August 2023

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													451		MPa	70 est	Strength,	Yield	Average	
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	f	BDS ISO 6935-2:2016 Weight Requirements, Nominal Area etc. (Table 2).
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unit length	Nominal mass per	lominal cross secti	lominal bar dia., mm	3DS ISO 6935-2:201
Permissible deviation, % ±8 ±8	Nominal, kg/m	cross sectional area, sq.mm	n	BDS ISO 6935-2:2016 Weight Requirements, Nominal Area etc. (Table 2).
±8	0.222	28.3	6	ominal
±8	0.39	50.3	8	Area e
16 15 15 15 15 15 14 14 14 14 14 14 14 14 14 14 14 14 14	0.616 0.887	28.3 50.3 78.5 113 154 201 314 380 491 616 804 1257 1964	10	tc. (Tal
±6	0.887	113	12	ble 2).
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#	1.58 2.46 2.98 3.85 4.84 6.31 9.87 15.42	616	28	1//
#	6.31	804	32	
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1	15.42	1964	50	

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Steel	Yield S	Yield Strength, R ett, MPa	Du	Ductiliy Properties
Grade	Min.	Max.	Rm/Ret	Elongation,
			min.	Total
B400C-R	400	-	1.15	74
B400CWR	400		1.15	14
B500C-R	500		1.15	14
B500CWR	500	-	1.15	14
B600C-R	600		1.15	70
B450CWR	450	1.25 R eн (min.)	1.15	:
B400DWR	400	1.3 R _{eH} (min.)	1.25	1
B420DWR	420	1.3 R eн (min.)	1.25	16
B500DWR	500	1.3 R eH (min.)	1.25	3

Conversion factor: 1.0 MPa = 1.0 N/mm² = 145 psi. Strengths are based on nominal area





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	Satisfactory		24			635	312		467	229		3.752	24.7	25	SSRM B420 DWR	ယ
	Satisfactory	25	25	1.36	635	635	311	466	465	228	3.757	3.757	24.7	25	SSRM B420 DWR	2
	Satisfactory		25			635	311		467	229		3.762	24.7	25	SSRM B420 DWR	_
			= .5d)		MPa	MPa	*	MPa	MPa	Š	kg/m	kg/m	mm	mm		
	samples)	(%)	(G.length		7 0	Rm		Res	R _e		Length	Length				
	(Seperate	Elongation	(%)		Strength,			Strength,	Strength	Load	Unit	Unit				
Test	Test	Total	Elongation		Tensile	Strength	Load	Yield	Proof	Proof	Mass Per	Per	dia.	dia.	Identification	No.
Rebeno	Bend	Average	Total	R _m /R _{eH}	Average	Tensile	Tensile	Average	Yield or	Yield or	Average	Mass	Actual	Nominal	Frog Mark /	SI.
			Campics were received in oreotevent collarion.	C	4010100014	A Calidada										

Nominal mass per Nominal, kg/m
unit length Permissible deviation, % Nominal bar dia., mm Nominal cross sectional area, sq.mm 22mm dia. bar is not covered in BDS ISO 6935-2:2016. Its properties are derived following the principle used for other bar sizes 0.222 28.3 0.395 0.616 0.887 1.21 1.58 2.46 2.98 ±6 ±5 ±5 ±5 ±5 154 201 314

3.85 4.84

9.87 15.42 40 50

BDS ISO 6935-2 Tensile Requirements for Common Steel Grades

Actual diameter is the diameter of a perfectly round plain bar having same mass per unit length

Actual diameter of bars are shown for informative purpose only. It is not a requirement of BDS ISO 6935-2:2016.

Steel	Yield S	Yield Strength, Ren, MPa	Du	Ductiliy Properties	ties
Grade	Min.	Max.	Rm/ReH	Elongation,	n, % (min.)
			min.	Total	At R _m
B400C-R	400		1.15	14	7
B400CWR	400	-	1.15	11	7
B500C-R	500		1.15	14	7
B500CWR	500		1.15	14	
B600C-R	600		1.15	10	
B450CWR	450	1.25 R eн (min.)	1.15		7.5
B400DWR	400	1.3 R _{ен} (min.)	1.25	17	8
B420DWR	420	1.3 R ен (min.)	1.25	16	8
B500DWR	500	1.3 R ен (min.)	1.25	3	8

Countersigned by:

Dept. of Civil Engg., BUET, Dhaka-1000, Bangladesh Prof. Dr. Hasib Mohammed Ahsan, Test-in-Charge



07 August 2023

Dr. Md. Shafiul Bari Test performed by:

Professor, Dept. of Civil Engg., BUET

samples are sent in a secure and sealed cover/packet/container under the signature of a competent authority. In order to avoid fradulent fabrication of test results, this report has been printed on a security pap It is also recommended that the test results be collected by a duly authorized person. Important Note: Samples as supplied to us have been tested. BRTC does not have any responsibility as to the representative character of the samples required to be tested. It is recommended that the